

WHAT IS CLAIMED IS:

1. A method to determine whether a first wireless terminal may transmit on an uplink to a servicing base station in a cellular wireless communication system, the method comprises:

5 receiving four Radio Frequency (RF) bursts from the servicing base station, wherein the four RF bursts carry a data block that includes:

Uplink State Flag (USF) bits; and

Data bits intended for a second wireless terminal;

processing the four RF bursts to produce the data block in an encoded format; and

10 partially decoding the data block in the encoded format to extract the USF bits; and

using the USF bits to determine whether the first wireless terminal may transmit on the uplink to the servicing base station.

2. The method of Claim 1 further comprises decoding the data block in the
15 background when the USF bits have been extracted from the data block.

3. The method of Claim 1, wherein the data block corresponds to a GSM frame and each RF burst corresponds to a GSM sub-frame of the GSM frame.

20 4. The method of Claim 3, wherein processing the four RF bursts to produce the data block comprises:

for each of four received RF bursts:

down converting each RF burst to produce a baseband signal;

sampling the baseband signal to produce a plurality of samples;

pre-equalization processing the plurality of samples; and
equalizing the plurality of samples to produce a plurality of soft decisions
corresponding to the RF burst;
combining the plurality of soft decisions of the four RF bursts to form the data block; and
5 de-interleaving the data block.

5. The method of Claim 1, wherein the first wireless terminal is a wireless terminal
that operates according to the GSM standard.

10 6. The method of Claim 1, wherein the data block is encoded according to a CS-1
encoding scheme of a GPRS portion of the GSM standard.

7. The method of Claim 1, wherein:
the data block is encoded according to both an outer encoding scheme and an inner
15 encoding scheme; and
partially decoding the data block includes partially decoding the data block according to
only the inner encoding scheme.

8. The method of Claim 7, wherein:
20 the outer encoding scheme comprises a linear binary block coding scheme; and
the inner encoding scheme comprises convolutional encoding.

9. The method of Claim 7, wherein:
the outer encoding scheme comprises Fire encoding; and

the inner encoding scheme comprises convolutional encoding.

10. The method of Claim 1, further comprising deinterleaving the data block prior to partially decoding the data block.

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11. The method of Claim 1, wherein the USF bits indicate:
whether a corresponding uplink is available; and
when the corresponding uplink is not available, an indication of a wireless terminal using the uplink.

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12. A wireless terminal that comprises:

a Radio Frequency (RF) front end operable to communicate with a servicing base station, wherein the RF front is operable to receive four RF bursts from the servicing base station that carries a data block having Uplink State Flag (USF) bits and data bits intended for a differing wireless terminal and to down convert the four RF bursts to produce a baseband signal;

a baseband processor communicatively coupled to the RF front end that is operable to receive the baseband signal from the RF front end and to process the baseband signal to produce the data block in an encoded format; and

an enCOder/DECOder (CODEC) processing module communicatively coupled to the baseband processor that is operable to:

receive the data block in the encoded format from the baseband processor;

partially decode the data block in the encoded format to extract the USF bits;

fully decode data blocks carrying data bits intended for the wireless terminal;

and

encode outgoing data bits to produce outgoing data blocks in an encoded format.

13. The wireless terminal of Claim 12, wherein the CODEC processing module decodes the data block in the background when the USF bits have been extracted from the data block.

14. The wireless terminal of Claim 12, wherein the data block corresponds to a GSM frame and each RF burst corresponds to a GSM sub-frame.

15. The wireless terminal of Claim 12, wherein the wireless terminal supports the GSM standard.

16. The wireless terminal of Claim 12, wherein the data block is encoded according to a CS-1 encoding scheme of a GPRS portion of the GSM standard.

17. The wireless terminal of Claim 12, wherein:

the data block is encoded according to both an outer encoding scheme and an inner encoding scheme; and

10 partially decoding the data block includes partially decoding the data block according to only the inner encoding scheme.

18. The wireless terminal of Claim 17, wherein:

the outer encoding scheme comprises a linear binary block coding scheme; and

15 the inner encoding scheme comprises convolutional encoding.

19. The wireless terminal of Claim 17, wherein:

the outer encoding scheme comprises Fire encoding; and

the inner encoding scheme comprises convolutional encoding.

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20. The wireless terminal of Claim 12, wherein the USF bits indicate:

whether a corresponding uplink is available; and

when the corresponding uplink is not available, an indication of a wireless terminal using the uplink.

21. A wireless terminal that comprises:

a Radio Frequency (RF) front end operable to communicate with a servicing base station, wherein the RF front receives four RF bursts from the servicing base station that carries an data block having Uplink State Flag (USF) bits and data bits intended for a differing wireless terminal and to down convert the four RF bursts to produce a baseband signal; and

a baseband processor communicatively coupled to the RF front end that is operable to:

receive the baseband signal from the RF front end and to process the baseband signal to produce the data block in an encoded format;

partially decode the data block in the encoded format to extract the USF bits;

fully decode other data blocks carrying data bits intended for the wireless terminal; and

encode outgoing data bits to produce outgoing data blocks.

22. The wireless terminal of Claim 21, wherein the baseband processor decodes the data block in the background when the USF bits have been extracted from the data block.

23. The wireless terminal of Claim 21, wherein the data block corresponds to a GSM frame and each RF burst corresponds to a GSM sub-frame.

24. The wireless terminal of Claim 21, wherein the wireless terminal supports the GSM standard.

25. The wireless terminal of Claim 21, wherein the data block is encoded according

to a CS-1 encoding scheme of a GPRS portion of the GSM standard.

26. The wireless terminal of Claim 21, wherein:

the data block is encoded according to both an outer encoding scheme and an inner

5 encoding scheme; and

partially decoding the data block includes partially decoding the data block according to only the inner encoding scheme.

27. The wireless terminal of Claim 32, wherein:

10 the outer encoding scheme comprises a linear binary block coding scheme; and

the inner encoding scheme comprises convolutional encoding.

28. The wireless terminal of Claim 32, wherein:

the outer encoding scheme comprises Fire encoding; and

15 the inner encoding scheme comprises convolutional encoding.

29. The wireless terminal of Claim 21, wherein the USF bits indicate:

whether a corresponding uplink is available; and

when the corresponding uplink is not available, an indication of a wireless terminal

20 using the uplink.